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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 20040413

Application Number: 09/719,546
Filing Date: December 22, 2000
Appellant(s): HEMSEN, STEVEN J.

Steven C. Bauman
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 5, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The Examiner notes that Appellant stated that all claims stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

3,529,320	KERNS et al	9-1970
4,517,137	SCHÖN	5-1985

The Admitted State of the Prior Art, pages 1-4 and figures 1-2 of the present specification

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-24 and 27-35 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted State of the Prior Art in view of Kerns et al (US 3529320) and Schön (US 4517137)

The Admitted State of the Prior Art, *at page 1-4 and figures 1-2 of the specification*, teaches that it is well known to use a liquid impregnant to seal the porosity of porous articles of materials such as lightweight metals. The material can be a curable sealant composition. Typically, among other steps, the article is subjected to vacuum aspiration in a vacuum tank, thereby removing entrapped air for the pores in the part; the article is immersed in a bath of an organic liquid impregnant such as an anaerobic impregnant; the article is maintained in a vacuum; and subsequently the immersed article is exposed to atmospheric pressure, thereby

causing the impregnant to permeate the pores. It is also possible for the impregnation chamber to be pressurized at the end of the vacuum cycle to force the impregnant into the pores of the article. Then, the liquid impregnant is returned to a storage reservoir and the article is centrifuged to expel any excess impregnant adhering to the surface thereof. The article is also subjected to a curing treatment. The Admitted State of the Prior Art teaches that the impregnation steps take place in a single, immobile chamber, which provides the disadvantage of a lengthy duration of treating time and a requirement of sequential step processing as well as other problems.

Thus, while the Admitted State of the Prior Art teaches a impregnation process for impregnating a polymerizable flowable composition into the pores of an article, including the steps of adding composition, vacuum treatment, pressure treatment, centrifuge, reclaiming and retrieval, it does not teach (1) sequentially directing a movable vessel to separate stations to perform the specific impregnation steps (claims 1, 9, 18, 33), (2) de-aeration treatment of the flowable composition (claims 12-14, 27-29, 34-35), (3) a plurality of stations and vessels (claim 30), (4) directing means (claim 31), (5) the controller for the directing means (claim 32) and (6) tipping the vessel to reclaim excess composition (claims 7 and 17).

Kerns teaches a method and apparatus for encapsulating electrically conductive means. *Figures 1-3 and column 1, lines 10-25.* Kerns teaches that prior art encapsulating methods and apparatus generally operated on the batch principle, which provides limited production capabilities due the length of time required for various steps of the process. *Column 1, lines 45-65.* Kerns provides a new method that increases the production capability compared to the batch process, by providing multiple processing vessels that are transported to various stations (index positions), so

that a specific step can be carried out in each station. *Column 1, line 60 through column 2, line 20.* The process can be used to encapsulate the electrically conductive means with a thermoset or thermoplastic resin. *Column 7, lines 65-70.* The article to be encapsulated is loaded into a vessel, and the vessel is moved sequentially through a series of stations. *Figures 1-3 and column 6, lines 30-45.* The stations include a flowable resin adding station, a vacuum station and a retrieval station. *Column 5, line 50 through column 6, line 30 and figures 1-3.* After processing through the stations, the coated article can be sent to a curing station to polymerize the composition. *Figure 3 and column 6, lines 25-30.* Kerns also teaches that the resin to be added is provided from a separate vessel. *Column 7, lines 50-65 and column 8, lines 5-50 and figure 2.* This vessel is provided under a vacuum, which de-aerates the resin system. *See column 8, lines 40-50.* Kerns also provides directing means for moving the vessels from one station to another. *See column 2, lines 45-75 (drive means 16 and carriage 12).* The means for moving is under the control of a conventional system. *See column 7, lines 45-55.*

Schön teaches an impregnation process and apparatus. *Figure 1 and column 1, lines 10-15.* At least one mobile vessel is provided in which impregnation of a porous article can be carried out. *Column 3, lines 1-25 and figure 1.* The vessel comprises a chamber for containing a flowable impregnating composition and at least one porous article to be coated. *Column 3, lines 1-25 and figure 1.* A series of stations are provided. *Figure 1 and column 3, lines 1-25.* These stations define an impregnation sequence. *Figure 1 and column 3, lines 1-25.* Each station performs at least one specific impregnation step on the porous article within the vessel. *Figure 1 and column 3, lines 1-25.* The vessel is sequentially directed to at least one selected station chosen

from said series of stations. *Figure 1 and column 3, lines 1-25.* The at least one specific impregnation step is performed at the selected station. *Figure 1 and column 3, lines 1-25.* The series of stations includes a vacuum station where a vacuum step is performed on the vessel to remove air from the porous article. *Figure 1 and column 6, lines 25-50.* The excess flowable impregnating composition is reclaimed after the impregnation step. *Claim 7, lines 35-45.* The stations include one where the reclaiming step is preformed. *Claim 7, lines 35-45 and figure 1 (as part of the pressurization station D).* Schön teaches that the system can be used to impregnate porous carbon or graphite bodies with materials such as tar or pitch, but also teaches that the system can also work for other types of bodies with other flowable materials. *See column 5, lines 35-50.* Schön also teaches a pressurization station that completes impregnation of the article. *See column 7, lines 25-45 (station D).* Schön also provides that stations can be large enough to process multiple vessels simultaneously. *Column 12, lines 10-15.*

It is the Examiner's position that it is well known to tip a vessel to remove/drain excess material in a vessel.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Admitted State of the Prior Art to sequentially direct a movable vessel to separate stations to perform the specific impregnation steps as suggested by Kerns and Schön to provide a more efficient and quick impregnating process and apparatus, because the Admitted State of the Prior Art teaches the various individual process steps required to impregnate a porous article with a polymerizible material using a batch method, but that such a batch process provides for an undesirably lengthy process, and Kerns teaches that when providing a resin encapsulating

process, the individual process steps can be performed in a vessel that moves from station to station for a method that is desirably quicker than a batch system, and Schön further teaches that it is conventionally known to provide a movable vessel that moves an article to be impregnated through individual impregnating step stations. The combination of references also provides directing means to transport the vessel from station to station, because both Kerns and Schön provide means for transporting the vessel from station to station. The combination of references also provides that it would have been obvious to modify the Admitted State of the Prior Art in view of Kerns and Schön so that stations can have a plurality of processing positions for accommodating multiple vessels simultaneously in order to provide maximum treatment efficiency, as Schön indicates that stations can be large enough to simultaneously receive two or more vessls. It would further have been obvious to modify the Admitted State of the Prior Art in view of Kerns and Schön to de-aerate the coating before it is sent to the vessels as suggested by Kerns to provide a desirable coating material, as Kerns teaches that it is desirable to de-aerate the coating material to prevent splattering of the resin when it is poured into the vessel. It would further have been obvious to modify the Admitted State of the Prior Art in view of Kerns and Schön to tip the vessel horizontally so as to pour out excess composition with an expectation of desirable impregnation results, because the Admitted State of the Prior Art teaches removing excess liquid and Schön teaches to remove excess composition and further teaches that the vessels are portable and with removable lids, and thus it would have been obvious to one of ordinary skill in the art that any conventionally known way to remove excess material from a vessel, i.e. by draining from a line, or pouring out by tipping, would be expected to provide desirable reclaiming

results. It further would have been obvious to one of ordinary skill in the art to modify the Admitted State of the Prior Art in view of Kerns and Schön provide a computer/machine logic based control means to provide a desirable path control, because Kerns teaches using conventional control means for logically coordinating the various switches and the liquid to control the system, and one of ordinary skill in the art would understand such systems to be well known to be computer controlled.

(11) Response to Argument

Appellant's Arguments

Appellant argues that Kerns teaches a process and apparatus for encapsulating electrical conductors with a resinous material, where the article to be encapsulated is inserted into a mold which is then filled with a flowable resin, which is then cured to form a rigid molded shell around the article. An encapsulant is used to protect the exterior of the article from environmental or to provide a cosmetic appearance to the surface of the article. In contrast, an impregnation sealant fills the pores of a porous article, thereby preventing leakage from or through the article. Since the pores are small, the sealant does not impact the appearance of the article. Appellant argues that, thus, Kerns does not disclose or suggest a process or apparatus for filling the pores of a porous article.

Appellant argues that there is no motivation to combine the teachings of Kerns with the alleged Admitted State of the Prior Art. The state of the art prior to the date of the present invention focused on processes related to the filling of pores within porous articles, while Kerns is

directed to forming a protective/cosmetic shell around an object. Appellant argues that the only way that the rejection would have been arrived at in their present state was to have examined the present claims using improper hindsight.

Appellant argues that since the process of encapsulation is directed at transforming the shape of the object being encapsulated into a form defined by the mold, to submit a porous article, already having a certain well defined form, to such a process would obviously result in an unacceptable product configuration that might be inconsistent with the function for which it was originally designed. Such an interpretation of Kerns is clearly inconsistent with what it actually does teach, and thus renders the reference ineffective for citation against the claims on appeal, according to appellant. It is impermissible to modify a cited document of record (Kerns) in a manner inconsistent with its teaching, for use in citation against claims under examination. Such modification destroys the cited document as an effective citation as a reference. Appellant further argues that the resin system of Kerns must be "castable", with an epoxy resin system preferred, which would not be suggested for the use in filling porous materials because it would add significant complexity to their process. Appellant is of the position that there is no incentive for one skilled in the art of processing porous materials to look to the teachings of Kerns to improve such processes. The only way one would do so is with the benefit of impermissible hindsight.

As to the use of Schön, appellant argues that one skilled in the art of filling porous material would not have been guided by the teaching of Schön to make appellant's invention. Appellant argues that process and apparatus of Schön are designed to fill the holes of porous solid

objects such as carbon or graphite electrodes with a filler material, which is described as "pitch" or "tar" or other fillers provided they carbonize within the pores upon heating. These materials are not polymerizable compositions, which is what is required by the present invention.

The process of Schön requires a heating stage prior to impregnation in order to heat the porous material and pitch to facilitate the impregnation of the pitch into the pores of a porous article. The use of a heating step in the present invention prior to impregnation would partially or completely polymerize the composition, making it incapable of impregnating the pores of the article, and the composition would thus be rendered useless of its intended purpose. Therefore, Schön teaches away from the claimed invention.

Schön's treatment process provides an electrode which is said to result in increased current carrying capacity, improved shock resistance and increased elasticity. In contract, the present process fills the pores of a porous article with a polymerizable composition for the purpose of sealing against leaks. These disparate objectives would fail to have led one of ordinary skill in the art of appellant's invention to a reading of Schön, appellant argues. Thus, once again, the only way to have reached this conclusion is with the use of improper hindsight.

The Examiner's Response

The Examiner has reviewed the above arguments, however, the rejection of the claims, as described in the *Grounds of Rejection* above, is maintained. The rejection of the pending claims is based on a combination of three references, each of which must be considered in their whole entirety. The primary reference is to the Admitted State of the Prior Art, which, as discussed in

the *Grounds of Rejection* above, teaches the various steps involved in impregnating the pores of an article with a polymerizable composition. The Admitted State of the Prior Art further teaches that this impregnation process is known to take place in a single, immobile chamber (that is, the process is a batch process), and that this use of a single, immobile chamber results in the known disadvantage of a lengthy duration of treating time and a requirement of sequential step processing as well as other problems. The Examiner cited the references to Kerns and Schön as providing suggestions to solve the known disadvantages of the Admitted State of the Prior Art.

Kerns is cited as a secondary reference that is to be combined with the primary reference, the Admitted State of the Prior Art. Appellant appears to be arguing that Kerns is non-analogous art, as it is directed to **encapsulating** an article with a polymerizable material, rather than **impregnating** an article with a polymerizable material. It is the Examiner's position that Kerns is, in fact, analogous art, and that it would be suggested to look to Kerns to modify the primary reference to the Admitted State of the Prior Art. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). While Kerns is directed to encapsulating, Kerns is also "reasonably pertinent to the particular problem with which applicant was concerned". Kerns directly teaches the benefits of switching from a batch process to a vessel transporting process, which allows improved treating times. In other words, Kerns speaks directly to the problem with which applicant was concerned – the problems resulting from batch processing of an article to be

treated with various steps using liquid polymerizable material (as noted the discussion of the Admitted State of the Prior Art in the ***Grounds of Rejection*** above).

The Examiner notes the arguments that the use of the encapsulating process and resin of Kerns teaches away from the requirements of the present claims and of primary reference to the Admitted State of the Prior Art and destroys the reference for use as an effective citation. However, the primary reference, the Admitted State of the Prior Art, is directed to the requirements of the present claims of impregnating a polymerizable material into the pores of an article. Kerns is a secondary reference, and teaches the benefits of switching from a batch processing to a vessel transporting process when treating an article in a vessel filled with polymerizable resin which is subjected to various processing steps. These transport benefits clearly would apply to various articles and materials. Kerns teaches a variety of resins, including thermoset or thermoplastic and clearly indicates that resin materials can be used in a transport process that includes vacuum pressurization. While Kerns also provides that the resin in the vessels is used for encapsulating rather than impregnating, Kerns provides no indication or feature that would teach against using batch processing for various other materials.

As to Schön, it is also, at the least, "reasonably pertinent to the particular problem with which applicant was concerned". Schön is reasonably pertinent to the problem of switching from a batch impregnation process to a transport vessel impregnation process, since Schön indicates the known use of transport impregnation process features when impregnating an article. In other words, Schön speaks directly to the problem with which applicant was concerned – the problems

with batch processing of an article to be treated with various steps in an impregnation process (as noted the discussion of the Admitted State of the Prior Art in the ***Grounds of Rejection*** above).

The Examiner notes the arguments that the use of the impregnation material and pre-impregnation heating process and resin of Schön teaches away from the requirements of the present claims and of primary reference to the Admitted State of the Prior Art and destroys the reference for use as an effective citation. However, the primary reference, the Admitted State of the Prior Art, is directed to the requirements of the present claims of impregnating a polymerizable material into the pores of an article. Schön is a secondary reference, and teaches the desirable use of a vessel transporting impregnation process when treating an article in a vessel filled with impregnating material which is subjected to various processing steps. These transport benefits clearly would apply to various articles and materials. In fact, the references to both Kerns and Schön in combination also indicate the use of mobile vessels to move the article to be treated in combination with treating material to various locations where different processing steps are performed.

While Kerns and Schön do not teach various features claimed by applicant, these references are the secondary references, and are used to teach various desirable features of a transport process as discussed in the Final Rejection.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed

invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the various features of the claimed invention, as discussed in the ***Grounds of Rejection*** above, are found or suggested in the cited prior art.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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PRIMARY EXAMINER
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April 14, 2004

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